

SILVER

By William E. Brooks

Domestic survey data and tables were prepared by Mahbood Mahdavi and Wanda G. Wooten, statistical assistants, and the world production table was prepared by Glenn J. Wallace, international data coordinator.

In 2004, the United States produced 1,250 metric tons (t) of silver, an increase of 10 t compared with 2003 silver production, and accounted for 6% of global mine production, which totaled 19,700 t. Approximately 99% of domestic silver was produced as a byproduct from base-metal ores at 12 mines and from precious-metal ores at 13 mines. Placer mines accounted for 1% or less of total production. Alaska remained the country's leading silver producer in 2004; silver production figures were concealed to avoid disclosing company proprietary data.

Silver prices averaged \$6.69 per troy ounce in 2004, a 17-year high. On a global scale, silver is mainly used for coins and medal fabrication; industrial applications, including electrical and electronics components; jewelry and silverware; and photography. There are also uses for silver in construction, specifically as an alternative wood preservative or to help resist mildew and mold, and in health sciences (Canadian Paediatric Society, 2002; Silver Institute, The, 2005a¹). In 2004, the use of silver continued to decline in jewelry, photography, and silverware. There was increased use of silver in coin and medal fabrication and for industrial applications, specifically electronics.

U.S. imports for consumption of refined silver in 2004 totaled approximately 4,100 t, 414 t less than in 2003 (table 1). Mexico (49%) was the leading source of imported refined silver into the United States, followed by Canada (31%) and Peru (14%).

In 2004, silver was mined in more than 50 countries; world mine production increased by 1,300 t, approximately 7% higher than 2003 production. Silver production in Russia rose by approximately 82%, to 1,277 t in 2004 from 700 t in 2003. The Dukat silver mine in eastern Russia reopened in the fourth quarter of 2002 and was expected to produce 500 t of silver and 1 t of gold during its projected 15-year life span. Dukat is the world's third ranked silver deposit and Russia's leading silver mine from 1980 to 1995. In 2004, Peru (3,060 t) was the world's leading producer of silver, followed by Mexico (2,700 t), China (2,450 t), and Australia (2,237 t) (table 8). Other sources indicated that Mexico was the leading producer followed by Peru, Australia, and China (Sullivan, 2001; Silver Institute, The, 2005, p. 19).

Legislation and Government Programs

The U.S. Mint is the custodian of most of the Nation's silver and is responsible for safeguarding a significant portion of the Nation's precious metal resources, such as gold, platinum, and silver. The value of the silver resources held by the U.S. Mint is reported at the lower of cost or market value. On September 30, 2004, the amounts and values of custodial silver in the custody of the U.S. Mint were 220,062 kilograms (kg) (7 million troy ounces) of silver with a market value of \$47 million at \$6.69 per fine troy ounce and a statutory value of \$9.148 million. A statutory rate of \$1.29292 per fine troy ounce was used to value the custodial silver held by the U.S. Mint (U.S. Mint, undated[§]).

Production

Mine production data were obtained from approximately 47 domestic producers, most of which responded to requests from the U.S. Geological Survey (USGS) for data, representing about 92% of U.S. production. Domestic mine production of silver, which totaled 1,250 t in 2004, was only slightly more than the 2003 mine production of 1,240 t (table 1).

Reported output at primary silver mines, such as those at Green's Creek, AK, Lucky Friday, ID, and Galena, ID, decreased because of lower silver grades (Silver Institute, The, 2005, p. 22). However, this general decline in silver production was stabilized by increased byproduct silver production from domestic gold, copper, and lead/zinc mines, specifically at Bingham Canyon, UT, Montana Tunnels, MT, and Red Dog, AK. For example, at Montana Tunnels, ore grades of silver were 0.32 troy ounces per metric ton in 2004, up from 0.21 ounces per ton during the same period in 2003. Milling production at Montana Tunnels also increased to 5,394 t milled in 2004 from 4,663 t in 2003 (Apollo Gold Corp., 2005, p. 31).

Consumption

Silver has the highest electrical and thermal conductivity of all the metals and is highly reflective, soft, and malleable. Occurrences of silver are relatively widespread, and it was one of the earliest metals used by man and remains one of the least expensive. Its properties result in its wide use, mainly for coins and medal fabrication, industrial applications including electrical and electronics components, jewelry and silverware, and photography (Etris, 1997, p. 163).

Coins and Medal Fabrication.—The United States is a world leader in the use of silver for coins and medals. In 2004, 483 t of silver was used for coins and medals, an increase of 6% from the 452 t used in 2003 (Silver Institute, The, 2005, p. 84). The U.S. Mint produced 13 billion coins in 2004, and several new polymetallic medals were introduced that honored the Louisiana Purchase

¹References that include a section mark (§) are found in the Internet References Cited section.

and the Lewis and Clark Expedition. The value of silver operating inventories (at \$1.29292 per troy ounce without fabrication and transportation) on September 30, 2004, in the U.S. Mint was \$13.2 million compared with \$16.7 million in 2003 (U.S. Mint, undated§).

Industrial Applications.—Silver is an excellent electrical and thermal conductor and is used in many applications, such as conductors, contacts, fuses, and switches. It is also used in the preparation of thick-film, silver-palladium pastes for use as silkscreen circuit paths in multilayer ceramic capacitors, in the manufacture of membrane switches, silver film in electrically heated automobile windows, smart cards, and conductive adhesives. Silver is also used in silver oxide batteries for watches and cameras. The United States is a world leader in the use of silver for industrial applications and, in 2004, used 2,937,500 kg (94 million troy ounces), an 8% increase from the 2,718,750 kg (87 million troy ounces) used in 2003 (Silver Institute, The, 2005, p. 50).

Jewelry and Silverware.—Global demand for silver in jewelry and silverware declined by 7.6% to 7,562,500 kg (242 million troy ounces) in 2004 from 8,187,500 kg (262 million troy ounces) in 2003 (CPM Group, 2005, p. 55). This decline was more notable in Asia, India, and the Middle East where silver represents a form of savings and collectibles. The U.S. demand for silver in 2004 in this market sector was 481,250 kg (15.4 million troy ounces), somewhat higher than the 471,875 kg (15.1 million troy ounces) used for fabrication in 2003 (Silver Institute, The, 2005, p. 62).

Photography.—Worldwide use of silver in photography in 2004 was estimated to have totaled 7,433,000 kg, approximately 4% lower than the 7,744,000 kg used in 2003. Use categories included commercial photography, dental and industrial x rays, graphic arts, and medical x rays (CPM Group, 2005, p. 54). This decline began in 2000 mainly because of competition from digital camera technology. In 2004, demand for digital cameras was up by 17%, and at least one out of two units sold were cameras of 5 million pixels or more. Sales of 35-millimeter (mm) cameras and one-time-use cameras declined by 20% and 14%, respectively; however, the volume of prints on silver-bearing paper from digital images increased by 64% (Photo Marketing Association International, 2005).

Other.—Silver is also used for batteries, bearings, brazing and soldering, catalysts, medical applications, mirrors, solar energy, and water purification (Silver Institute, The, 2005b§). There is increasing use of silver in superconductors and in antibacterial products for kitchen counter tops, socks, and water purification systems. Silver may also be used as an alternative element in wood preservatives (National Mining Association Mining Week, 2003). Dental amalgam, though in declining use because of its mercury content, may contain 34% to 38% silver (Lawrence, 1995; Davis, 2003§).

Prices

For 2004 the price of silver ranged between \$5.50 and \$8.29 per troy ounce, with an annual average price of \$6.69 per ounce, 36% above the 2003 average price of \$4.91 per ounce. The last time that the average price of silver was above \$6.00 per ounce was in 1987 and 1988, when the average prices were \$7.00 per ounce and \$6.53 per ounce, respectively (Kitco Inc., 2005§).

Trade

In 2004, the United States imported slightly more than 4,000 t of refined silver and exported 422 t of refined silver (table 1). The United States exported 384 t of bullion, dore, and ores and concentrates in 2004, with 218 t of bullion going to Canada and 20 t going to India. Switzerland received 69 t of dore from the United States in 2004.

World Review

World mine production increased by 7% to 19,700 t in 2004 from 18,400 t in 2003 (table 8). The increase was attributed mainly to an 82% increase in silver production in Russia to 1,277 t in 2004 from 700 t in 2003. Of the world's primary silver mines, production increased at the Arcata silver-gold mine in Peru (65%) and at the Cannington silver-lead mine in Australia (20%) (CPM Group, 2005, p. 33). Above-ground stocks of silver decreased to 6,290 t in 2004 from 6,570 t in 2003 (Silver Institute, The, 2005, p. 30).

China.—Silver production in China increased to 1,570 t in 2000 from 517 t in 1985, an average growth rate of 7.7%. China will continue to be a major source of silver supply and demand, and the Government of China has given preferential policies to the production and development of its silver industry (Antaike Precious & Minor Metals Monthly, 2004; GFMS Limited, 2005§).

Peru.—Four mines in Peru are listed among the world's top 15 primary silver mines, and the overall increase in production for these Peruvian mines was 15%, to 762,000 kg (24.4 million ounces) in 2004 from 663,000 kg (21.2 million ounces) in 2003 (Silver Institute, The, 2005, p. 87).

Russia.—The Dukat Mine increased its production by 30% to 376,875 kg (12.06 million ounces) in 2004 from 287,500 kg (9.2 million ounces) in 2003 (Silver Institute, The, 2005, p. 87).

Current Research and Technology

Silver has a long history of antibacterial uses. The ancient Greeks drank wine from silver cups because they thought it would minimize the outbreak of disease. In the Middle Ages, wealthy families thought that silver had disease-fighting properties, so they fed their children with silver spoons.

Laboratory testing of antibacterial bandages that contain silver oxide in trace amounts (0.003%) reduced the growth of *Staph. aureus*, *E. coli*, *E. hirae*, and *P. aeruginosa* for 24 hours. These bandages have now been approved by the U.S. Food and Drug

Administration, and the bandages are indicated as first aid to help prevent infection from minor abrasions, cuts, and scrapes (Walgreen Co., 2005§; Wolf, 2005§).

There are also uses for silver in construction, specifically as an alternative wood preservative or to help resist mold and mildew in house frames (National Mining Association Mining Week, 2003; Silver Institute, The, 2005a§). Testimonials have been given on the use of small amounts of silver suspended in water, or colloidal silver, for a variety of human and animal ailments (Robey, 2005§).

Outlook

In 2004, silver use was estimated to total 7,430 t or 4% lower than the 7,740 t used in 2003. Silver use in photography fell for the third consecutive year. Digital photography continues to erode the use of silver in the photographic market. It appears that digital technology will continue to grow and affect demand for photographic, medical x-ray, and motion picture films and graphic arts paper. As the cost for digital cameras declines, this process can be expected to accelerate. Uses for silver continue to grow in the fields of construction, electronics, medicine, superconductivity, water purification, wood preservatives, wound care, and many others.

On January 13, 2004, Eastman Kodak Company announced that it would increase its commitment to high-performance Advanced Photo System films and 35-mm reloadable camera sales and manufacturing in emerging markets, such as China, Eastern Europe, India, and Latin America (Eastman Kodak Company, 2004). Therefore, the “digital effect” on world silver consumption might be less than anticipated because China is a growing and leading market for photographic materials and color paper.

The battery and fuel cell materials market is expected to grow by 6% per year through 2007, and fuel cell output should climb as well. Fuel cells that use metals, specifically silver, are expected to lead the technology. Fuel cell development for use in motor vehicles relies on alkaline-base cells and proton exchange membrane cells. Most research is on platinum-base fuel cells; alkaline-base cells, however, are also of interest because they have cost and technical advantages that include the ability to use nonplatinum catalysts such as gold or silver (Freedonia, 2005§).

References Cited

- Antaike Precious & Minor Metals Monthly, 2004, Chinese silver consumption and developing trend: Antaike Precious & Minor Metals Monthly, no. 57, November, p. 1-6.
- Apollo Gold Corp., 2005, Form 10-K—2004: Securities and Exchange Commission, 98 p.
- Canadian Paediatric Society, 2002, Recommendations for the prevention of neonatal ophthalmia: Paediatric Child Health, v. 7, no. 7, September, p. 480-483.
- CPM Group, 2005, CPM Group’s silver survey 2005: New York, NY, CPM Group, 190 p.
- Eastman Kodak Company, 2004, Kodak to accelerate 35 mm consumer film effort in emerging markets: Rochester, NY, Eastman Kodak Company news release, January 13, 2 p.
- Etris, S.F., 1997, Silver and silver alloys, in Kirk-Othmer encyclopedia of chemical technology (4th ed.): New York, NY, John Wiley and Sons, v. 22, p. 163-179.
- Lawrence, B.J., 1995, Going down for the count: Engineering and Mining Journal, v. 196, no. 3, March, p. 42-43.
- Photo Marketing Association International, 2004, PMA processing survey, highlights and overview through January 2004: Jackson, MI, Photo Marketing Association International news release, March 22, 15 p.
- National Mining Association Mining Week, 2003, Silver biocides could serve as effective wood preservative: National Mining Association Mining Week, v. 9, issue 37, p. 2.
- Silver Institute, The, 2005, World silver survey 2005: Washington, DC, The Silver Institute, May, 88 p.
- Sullivan, K.A., 2001, After four centuries silver still shines for Mexican town: The Washington Post, October 26, p. A2.

Internet References Cited

- Davis, Eric, 2003, Facts about mercury, accessed August 13, 2003, at URL http://www.ericdavisdental.com/facts_and_figures_mercury.htm.
- Freedonia, 2005, Battery and fuel cell materials to 2007, accessed October 31, 2005, via URL <http://www.freedoniagroup.com>.
- GFMS Limited, 2005 (September), A review of the Chinese silver market, accessed October 31, 2005, via URL <http://www.silverinstitute.org>.
- Kitco Inc., 2005, Historical silver, accessed October 28, 2005, via URL <http://www.kitco.com>.
- Robey, A.R., 2005, What is colloidal silver?, accessed October 25, 2005, via URL <http://www.colloidal-silver.com>.
- Silver Institute, The, 2005a, Silver ions in house frames resist mold and mildew, accessed September 23, 2005, via URL <http://www.silverinstitute.org>.
- Silver Institute, The, 2005b, The indispensable metal, accessed August 27, 2005, via URL <http://www.silverinstitute.org>.
- U.S. Mint, [undated], 2004 annual report, accessed October 25, 2005, via URL <http://www.usmint.gov>.
- Walgreen Co., 2005, Silver gel antibacterial bandages, accessed October 31, 2005, via URL <http://www.walgreens.com>.
- Wolf, Sidney, 2005, Antibacterial silver products finally emerge, accessed October 31, 2005, via URL <http://www.newstarget.com>.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

- 1998 Assessment of Undiscovered Deposits of Gold, Silver, Copper, Lead, and Zinc in the United States. Circular 1178, 2000.
- Precious Metals. Mineral Industry Surveys, monthly (through December 2003).
- Silver. Mineral Industry Surveys, monthly (since January 2004).
- Silver. Ch. in Mineral Commodity Summaries, annual.
- Silver. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

TABLE 1
SALIENT SILVER STATISTICS¹

		2000	2001	2002	2003	2004
United States:						
Mine production:						
Quantity	metric tons	1,980	1,740	1,350	1,240	1,250
Value	thousands	\$318,000	\$245,000	\$201,000	\$196,000	\$268,000
Refinery production:						
Domestic and foreign ores and concentrates	metric tons	2,780	2,640	2,580	2,580 ^r	1,140
Scrap (old and new)	do.	1,680	1,060	1,030	1,010 ^r	1,920
Exports, refined	do.	373	783	680	181	422
Imports for consumption, refined	do.	4,090	3,340	4,300	4,510	4,100
Stocks, December 31:						
Industry	metric tons	462	360	280	93	131
Futures exchanges	do.	2,920	3,250	3,290	3,430	3,580
U.S. Department of the Treasury	do.	220	220	220	220	220
National Defense Stockpile	do.	458	21	--	--	--
Price, average ²	dollars per troy ounce	\$5.00	\$4.39	\$4.62	\$4.91	\$6.69
Employment, mine and mill workers ³		1,200	1,100	1,100	1,200	NA
World, mine production	metric tons	18,100 ^r	18,900 ^r	18,500 ^r	18,400 ^r	19,700 ^c

^cEstimated. ^rRevised. NA Not available. -- Zero.

¹Data are rounded to no more than three significant digits, except prices.

²Price data are the annual Handy & Harman quotations published in Platts Metals Week.

³Employment data are from the Mine Safety and Health Administration.

TABLE 2
MINE PRODUCTION OF SILVER IN THE UNITED STATES, BY STATE¹

(Kilograms)

State	2002	2003	2004
California	3,440	958	801
Nevada	424,000	322,000	302,000
Other ²	927,000	916,000	943,000
Total	1,350,000	1,240,000	1,250,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes Alaska, Arizona, Colorado, Idaho, Missouri, Montana, New Mexico, South Dakota, and Utah.

TABLE 3
LEADING SILVER-PRODUCING MINES IN THE UNITED STATES IN 2004, IN ORDER OF OUTPUT¹

Rank	Mine	County and State	Operator	Source of silver
1	Greens Creek	Juneau, AK	Kennecott Greens Creek Mining Co.	Zinc ore.
2	Red Dog	Northwest Arctic, AK	Teck Cominco Alaska Inc.	Lead-zinc ore.
3	Rochester	Pershing, NV	Coeur d'Alene Mines Corp.	Gold ore.
4	Bingham Canyon	Salt Lake, UT	Kennecott Utah Copper Corp.	Copper-molybdenum ore.
5	Galena	Shoshone, ID	Silver Valley Resources Corp.	Silver ore.
6	Midas ²	Elko, NV	Newmont Gold Company	Gold ore.
7	Lucky Friday	Shoshone, ID	Hecla Mining Company	Silver ore.
8	Montana Tunnels	Jefferson, MT	Montana Tunnels Mining, Inc.	Gold ore.
9	Bagdad	Yavapai, AZ	Phelps Dodge Corp.	Copper-molybdenum ore.
10	Continental Pit	Silver Bow, MT	Montana Resources	Do.
11	Carlin Mines Complex	Elko, Eureka, NV	Newmont Gold Company	Gold ore.
12	Round Mountain	Nye, NV	Round Mountain Gold Corporation	Do.
13	Brushy Creek	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
14	Mission Complex ³	Pima, AZ	ASARCO Incorporated	Copper ore.
15	Denton-Rawhide	Mineral, NV	Kennecott Rawhide Mining Co.	Gold ore.
16	Fletcher	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
17	Buick	Iron, MO	do.	Do.
18	Ray	Pinal, AZ	ASARCO Incorporated	Copper ore.
19	Meikle/Goldstrike	Elko, NV	Barrick Gold Corporation	Gold ore.
20	Viburnum #28	Iron, MO	Doe Run Resources Corp.	Lead ore.
21	Betze-Post/Goldstrike	Eureka, NV	Barrick Gold Corporation	Gold ore.
22	Chino	Grant, NM	Phelps Dodge Corp.	Copper-molybdenum ore.
23	Sweetwater	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
24	Florida Canyon	Pershing, NV	Florida Canyon Mining, Inc.	Gold ore.
25	Kettle River	Ferry, WA	Echo Bay Mines Ltd.	Do.

¹The mines on this list accounted for 99% of U.S. mine production in 2004.

²Formerly Ken Snyder.

³Includes Eisenhower, Mission, Pima, and San Xavier Mines.

TABLE 4
U.S. EXPORTS OF SILVER, BY COUNTRY¹

Year and country	Silver ores and concentrates		Bullion		Dore		Total	
	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)
2003	57,900	\$16,200	135,000	\$20,700	19,800	\$3,190	212,000	\$40,100
2004:								
Armenia	369	70	--	--	--	--	369	70
Australia	--	--	22,300	3,780	--	--	22,300	3,780
Belgium	--	--	--	--	593	103	593	103
Canada	--	--	218,000	46,700	63	13	218,000	46,700
China	--	--	41	10	--	--	41	10
Colombia	--	--	--	--	31	9	31	9
Dominican Republic	654	141	--	--	--	--	654	141
France	--	--	--	--	27	8	27	8
Gambia	50	12	--	--	--	--	50	12
Germany	25	5	70	19	--	--	95	24
Hong Kong	--	--	748	117	--	--	748	117
India	--	--	19,900	4,280	--	--	19,900	4,280
Japan	--	--	18,200	5,060	--	--	18,200	5,060
Korea, Republic of	--	--	25	4	--	--	25	4
Mexico	78	14	16,600	2,770	410	96	17,100	2,880
Netherlands	--	--	62	18	--	--	62	18
Niger	--	--	32	12	--	--	32	12
Norway	--	--	--	--	2,290	507	2,290	507
Singapore	--	--	--	--	5,150	1,040	5,150	1,040
Spain	--	--	28	9	1,960	367	1,990	376
Switzerland	--	--	2,990	687	69,200	16,600	72,200	17,300
Trinidad and Tobago	230	49	--	--	--	--	230	49
Turkey	154	15	18	5	--	--	172	20
United Kingdom	--	--	--	--	102	21	102	21
Uruguay	--	--	3,360	1,050	--	--	3,360	1,050
Total	1,560	306	302,000	64,500	79,800	18,800	384,000	83,600

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF SILVER, BY COUNTRY¹

Year and country	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms ²		Waste and scrap	
	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)
2003	26,000	\$5,470	473,000	\$81,500	69,200	\$9,120	344,000	\$59,400	2,380,000	\$555,000
2004:										
Antigua Barbuda	123	27	--	--	--	--	--	--	--	--
Aruba	3	3	--	--	--	--	118	20	2	10
Australia	--	--	30	9	18,700	1,940	3,400	662	--	--
Austria	--	--	81	14	--	--	15	3	335	44
Bahrain	--	--	--	--	--	--	145	25	--	--
Belgium	117	32	2,550	434	--	--	5,420	921	166,000	41,100
Brazil	36	8	--	--	--	--	1,380	232	--	--
Canada	12,300	2,640	19,200	3,330	29,300	2,260	119,000	21,500	692,000	110,000
Cayman Islands	233	58	--	--	--	--	--	--	--	--
China	107	23	1,740	295	1,000	151	2,380	408	395,000	55,000
Colombia	--	--	--	--	--	--	57	10	2,210	290
Cote d'Ivoire	--	--	--	--	171	38	78	15	--	--
Czech Republic	--	--	402	66	--	--	39	7	--	--
Dominican Republic	5,950	1,310	--	--	--	--	1,750	297	218	28
Egypt	--	--	--	--	--	--	160	27	--	--
Finland	--	--	1,280	217	70	13	--	--	--	--
France	206	42	32,500	5,560	--	--	6,550	1,230	--	--
Germany	176	32	87,900	15,100	194	34	7,920	1,460	346,000	66,300
Guadeloupe	--	--	--	--	--	--	136	23	--	--
Honduras	--	--	--	--	--	--	94	16	--	--
Hong Kong	562	138	43,000	7,320	--	--	10,600	1,850	5,140	666
India	630	111	--	--	--	--	348	59	998	130
Indonesia	--	--	18	3	--	--	--	--	545	71
Ireland	--	--	523	94	34	6	68	14	--	--
Israel	--	--	88	15	49	3	740	140	--	--
Italy	319	70	9,700	1,650	--	--	2,920	501	289,000	57,000
Jamaica	292	64	--	--	--	--	179	30	--	--
Japan	14	11	145,000	25,500	1,380	294	3,480	592	9,050	28,500
Jordan	--	--	--	--	--	--	206	35	--	--
Korea, Republic of	83	16	152,000	26,300	155	23	5,350	917	29,600	3,990
Kuwait	--	--	--	--	159	9	--	--	--	--
Lithuania	--	--	--	--	--	--	176	30	--	--
Lebanon	--	--	1,070	185	--	--	--	--	--	--
Malaysia	--	--	--	--	--	--	324	55	61	8
Mexico	4,880	1,180	19,800	3,150	8,480	668	16,700	3,580	47	8
Netherlands	--	--	7,350	1,250	--	--	13,900	2,400	904	236
Netherlands Antilles	131	29	--	--	--	--	514	87	283	72
New Zealand	--	--	--	--	186	12	--	--	--	--

See footnotes at end of table.

TABLE 5—Continued
U.S. EXPORTS OF SILVER, BY COUNTRY¹

Year and country	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms ²		Waste and scrap	
	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)
2004—Continued:										
Norway	--	--	--	--	--	--	497	\$84	--	--
Panama	--	--	925	\$157	--	--	64	11	--	--
Philippines	--	--	--	--	220	\$22	1,430	237	--	--
Poland	49	\$20	--	--	--	--	4,390	757	--	--
Saudi Arabia	--	--	--	--	--	--	--	--	162,000	\$29,100
Seychelles	--	--	--	--	--	--	--	--	750	98
Singapore	166	39	10,100	1,720	228	7	9,310	1,620	266	35
South Africa	--	--	--	--	52	8	--	--	3,900	554
Spain	--	--	--	--	--	--	19,600	3,350	10,400	1,360
Sri Lanka	--	--	--	--	665	184	--	--	--	--
Sweden	--	--	14,300	2,430	--	--	132	28	48,900	7,200
Switzerland	99	24	853	155	--	--	1,600	272	342	2,320
Taiwan	88	21	80,000	13,600	151	30	6,370	1,110	13,300	2,220
Thailand	6,650	1,400	353	60	--	--	3,350	570	3,290	591
Trinidad and Tobago	--	--	--	--	--	--	397	70	--	--
United Arab Emirates	--	--	--	--	--	--	70	12	20	4
United Kingdom	5,050	1,090	77,600	13,300	286	26	11,500	1,980	61,800	17,000
Uruguay	--	--	--	--	--	--	5,730	974	--	--
Venezuela	--	--	--	--	--	--	--	--	138	18
Vietnam	1,150	222	--	--	--	--	--	--	1,690	220
Other	256	74	66	12	--	--	215	43	106	15
Total	39,700	8,680	708,000	122,000	61,500	5,730	269,000	48,300	2,240,000	424,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Containing 99.5% or more by weight of silver.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF SILVER, BY COUNTRY¹

Year and country	Silver ores and concentrates		Ash and residues		Bullion		Dore		Total	
	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)
2003	2,540	\$1,370	1,340	\$266	4,000,000	\$630,000	233,000	\$72,200	4,240,000	\$703,000
2004:										
Australia	--	--	--	--	5,940	1,310	--	--	5,940	1,310
Belgium	--	--	--	--	303	60	--	--	303	60
Canada	2,220	1,410	--	--	1,160,000	257,000	2,970	475	1,170,000	259,000
Chile	--	--	--	--	54,500	11,100	8,980	1,980	63,500	13,100
China	--	--	--	--	40,000	8,200	--	--	40,000	8,200
Colombia	--	--	--	--	79	17	1,540	340	1,620	357
Costa Rica	--	--	--	--	46	14	--	--	46	14
El Salvador	--	--	--	--	35	15	--	--	35	15
France	--	--	--	--	--	--	149	33	149	33
Honduras	--	--	--	--	--	--	58	13	58	13
Hong Kong	--	--	--	--	36,200	8,330	--	--	36,200	8,330
Italy	--	--	--	--	5	6	302	71	307	77
Mexico	--	--	--	--	1,570,000	332,000	267,000	97,800	1,840,000	430,000
Panama	--	--	--	--	146	61	--	--	146	61
Peru	--	--	--	--	473,000	96,800	64,800	15,800	538,000	113,000
Poland	--	--	--	--	60,000	12,800	--	--	60,000	12,800
South Africa	--	--	--	--	6	6	--	--	6	6
Taiwan	--	--	6,710	1,530	--	--	--	--	6,710	1,530
United Kingdom	--	--	--	--	2,720	311	(2)	3	2,720	314
Total	2,220	1,410	6,710	1,530	3,410,000	728,000	346,000	117,000	3,760,000	848,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF SILVER, BY COUNTRY¹

Year and country	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms ²		Waste and scrap	
	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)
2003	281,000	\$42,200	20,800	\$4,160	661	\$96	17,000	\$2,700	886,000	\$107,000
2004:										
Australia	--	--	--	--	--	--	--	--	143	1,220
Brazil	--	--	--	--	--	--	12,900	2,940	99	187
Canada	89,400	19,000	1,900	356	--	--	18,800	4,020	99,500	17,900
China	--	--	55	9	--	--	231	44	17,100	1,720
Colombia	--	--	--	--	--	--	--	--	8	110
Costa Rica	--	--	--	--	--	--	--	--	81,400	7,870
Cyprus	--	--	--	--	--	--	--	--	117	37
Dominican Republic	603	118	94	27	--	--	--	--	1,620	2,460
France	33	16	4,920	1,280	--	--	34	14	327,000	2,210
Germany	741	226	2,450	622	--	--	12,400	3,130	4,240	8,920
Guatemala	--	--	--	--	--	--	--	--	58	465
Honduras	--	--	37	8	--	--	--	--	30	239
Hong Kong	--	--	--	--	--	--	--	--	51	14
Hungary	--	--	--	--	--	--	--	--	11	60
India	906	235	--	--	--	--	--	--	23	2
Indonesia	39	9	--	--	--	--	--	--	--	--
Ireland	--	--	--	--	--	--	--	--	813	906
Israel	--	--	6	14	--	--	--	--	1,670	179
Italy	134	47	--	--	--	--	13	14	36,800	7,370
Jamaica	--	--	--	--	--	--	--	--	541	75
Japan	2,330	815	15,300	4,050	--	--	78	12	5,260	11,400
Jordan	--	--	--	--	--	--	--	--	263	92
Korea, Republic of	--	--	--	--	--	--	--	--	47,700	3,100
Malaysia	--	--	--	--	--	--	--	--	156,000	7,860
Mauritius	--	--	--	--	--	--	--	--	106	23
Mexico	247,000	49,100	--	--	--	--	934	217	765,000	43,700
Netherlands	--	--	363	67	--	--	--	--	--	--
New Zealand	--	--	--	--	--	--	--	--	123	700
Nicaragua	--	--	--	--	--	--	--	--	10	61
Norway	--	--	14	2	--	--	--	--	--	--
Panama	--	--	--	--	--	--	128	20	662	3,910
Peru	--	--	--	--	--	--	6,570	1,400	9	115
Philippines	--	--	--	--	--	--	--	--	33,300	1,110
Poland	--	--	--	--	--	--	(3)	2	--	--
Romania	--	--	3	2	--	--	--	--	--	--
Saint Vincent and the Grenadines	--	--	--	--	--	--	--	--	15	30
Saudi Arabia	--	--	--	--	--	--	--	--	4	56
Singapore	--	--	--	--	--	--	--	--	13,300	858

See footnotes at end of table.

TABLE 7—Continued
U.S. IMPORTS FOR CONSUMPTION OF SILVER, BY COUNTRY¹

Year and country	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms ²		Waste and scrap	
	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)
2004—Continued:										
South Africa	--	--	--	--	--	--	--	--	2	\$49
Spain	--	--	--	--	--	--	--	--	2	16
Sweden	--	--	--	--	--	--	--	--	5	20
Switzerland	--	--	982	\$240	--	--	199	\$51	16	120
Taiwan	--	--	--	--	--	--	--	--	391	133
Thailand	3	\$2	--	--	--	--	--	--	8	95
Trinidad and Tobago	12	3	--	--	--	--	--	--	230	3
Turkey	--	--	--	--	--	--	--	--	1	15
United Kingdom	99	7	1,170	245	--	--	58	80	428,000	11,100
Venezuela	--	--	--	--	--	--	--	--	3,160	24,800
Other	--	--	12	4	--	--	--	--	52	507
Total	342,000	69,600	27,400	6,920	--	--	52,300	11,900	2,020,000	161,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Containing 99.5% or more by weight of silver.

³Less than ½ unit.

TABLE 8
SILVER: WORLD MINE PRODUCTION, BY COUNTRY^{1,2}

(Metric tons)

Country	2000	2001	2002	2003	2004 ^c
Algeria ^c	1	2 ³	1 ^r	1 ^r	2
Argentina	78	153	126	134	172 ³
Armenia	NA	NA	6	4	4
Australia	2,060	2,100 ^e	2,077	1,872	2,237 ³
Bolivia	434	411 ^r	83 ^r	85 ^r	85 ³
Brazil ^d	91 ^r	96 ^r	33 ^r	31 ^r	32
Bulgaria ^c	54	57	60	50 ^r	50
Burma	2	2	2 ^e	8 ^r	1
Canada	1,212	1,320 ^r	1,408	1,310 ^r	1,336 ³
Chile	1,242	1,349	1,210	1,313 ^r	1,360 ³
China ^c	1,600	1,910	2,200	2,400 ^r	2,450
Colombia	8	7	7	10	8 ³
Costa Rica ^c	(5)	(5)	(5)	(5) ^r	(5)
Ecuador ^c	2	2	(5) ^r	(5) ^r	(5)
Ethiopia	1	4 ^r	1	1	1
Fiji	1	--	--	--	--
Finland	25	24	29 ^r	34 ^e	33
France ^c	1 ³	1	1	1	1
Ghana	6	2	2	2 ^r	2
Greece	37	62	75	79	79 ³
Honduras	32	47	53	48 ^r	48
India	41 ^r	50 ^r	52	51 ^r	13
Indonesia	256	270	294	285 ^r	263 ³
Iran ^c	22	22	23	23	23
Ireland	25	19	5 ^e	20 ^r	20
Italy ⁶	4	4	4 ^e	4 ^e	3
Jamaica	--	(5)	(5) ^e	(5) ^r	(5)
Japan	104	80	81	79	79 ³
Kazakhstan	927	982	893	827	733
Korea, North ^c	20 ^r	20 ^r	20 ^r	20 ^r	20
Macedonia ^c	22 ^r	15 ^r	12 ^r	10	10
Malaysia	(5)	(5)	--	--	-- ³
Mali ^c	1	2	3	3	3
Mexico	2,620	2,760	2,747	2,569	2,700 ³
Mongolia ^c	25	27	27	27	28
Morocco	289	281	277	201	201
Namibia	9	20	44	45 ^e	50
New Zealand ^c	23	23	32	32	52 ³
Nicaragua	2	3 ^r	2 ^r	2 ^r	2
Oman	5	3	4	-- ^e	--
Panama ^c	-- ^r	-- ^r	-- ^r	-- ^r	--
Papua New Guinea ^c	73	73	75	74	74
Peru	2,438 ^r	2,571 ^r	2,870 ^r	2,921 ^r	3,060 ³
Philippines ^c	17	17	9	9	18 ³
Poland	1,148	1,194	1,229	1,237 ^r	1,250
Portugal	21	23 ^e	20 ^r	21 ^r	24
Romania ^c	18	18	15	18 ^r	20
Russia ^c	370	380	400	700	1,277 ³
Saudi Arabia	9	15	14 ^e	13 ^e	6
Serbia and Montenegro	9	6	7	1 ^r	2
Solomon Islands ^c	(5)	--	--	--	--
South Africa	144	110	113	80	72 ³
Spain ^c	66 ³	60	3 ^r	2 ^r	2
Sudan	NA	2	3	3 ^e	3

See footnotes at end of table.

TABLE 8—Continued
SILVER: WORLD MINE PRODUCTION, BY COUNTRY^{1, 2}

(Metric tons)

Country	2000	2001	2002	2003	2004 ^c
Sweden	329	306	293 ^r	307 ^r	293 ³
Tanzania	1	7	8 ^r	8 ^e	8
Tajikistan	5	5 ^e	5 ^r	5 ^r	5
Tunisia	4	4	3 ^e	3 ^e	2
Turkey ^c	110	118 ^r	126 ^r	123 ^r	130
United States	1,980	1,740	1,350	1,240	1,250 ³
Uzbekistan ^c	90 ³	80	80	80	80
Zambia ⁷	5 ^e	--	--	--	--
Zimbabwe	4	3	3 ^r	2 ^r	(5) ³
Total	18,100 ^r	18,900 ^r	18,500 ^r	18,400 ^r	19,700

^cEstimated. ^rRevised. NA Not available. -- Zero.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Recoverable content of ores and concentrates produced unless otherwise specified. Table includes data available through August 13, 2005.

³Reported figure.

⁴Includes the following quantities, in kilograms, identified as secondary silver: 2002-04—50,000.

⁵Less than ½ unit.

⁶Includes production from imported ores.

⁷Year beginning April 1 of that stated.